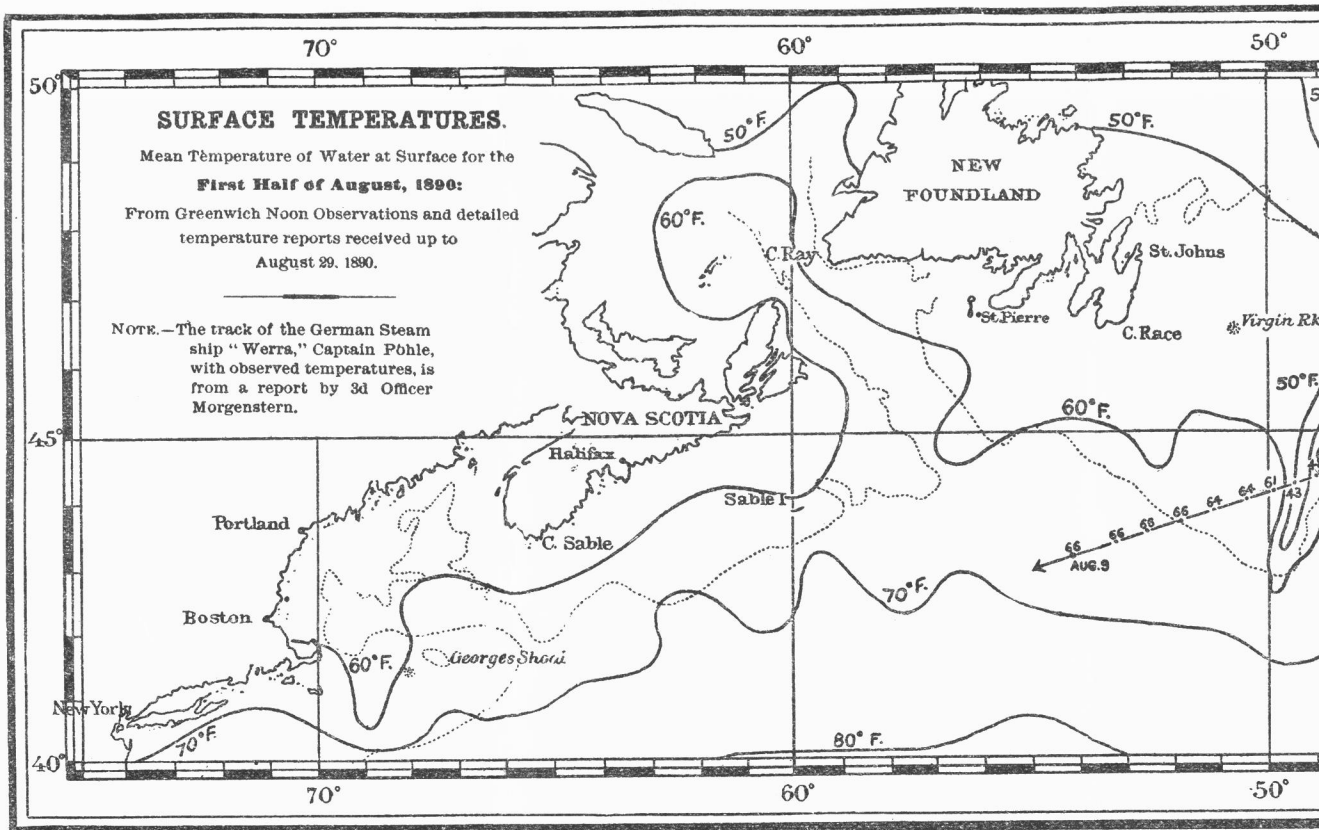
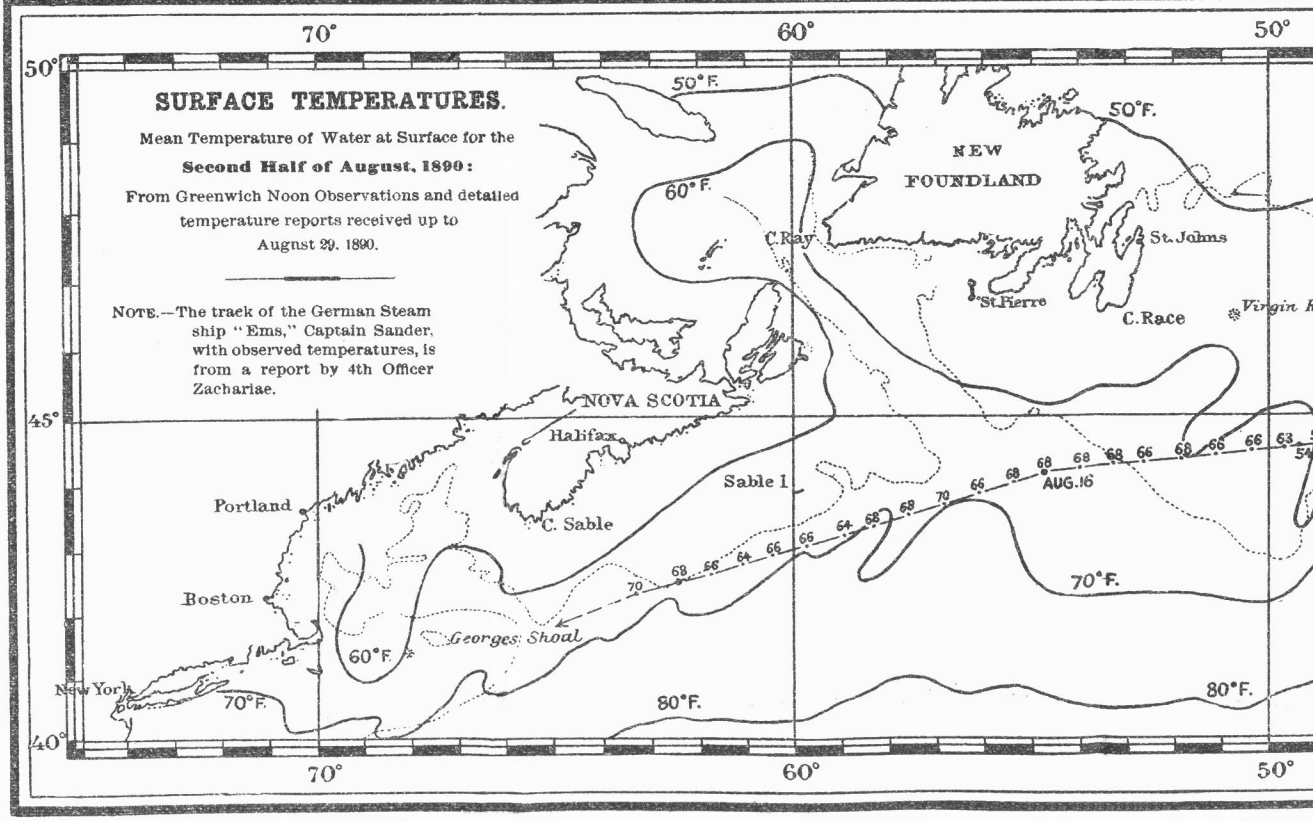
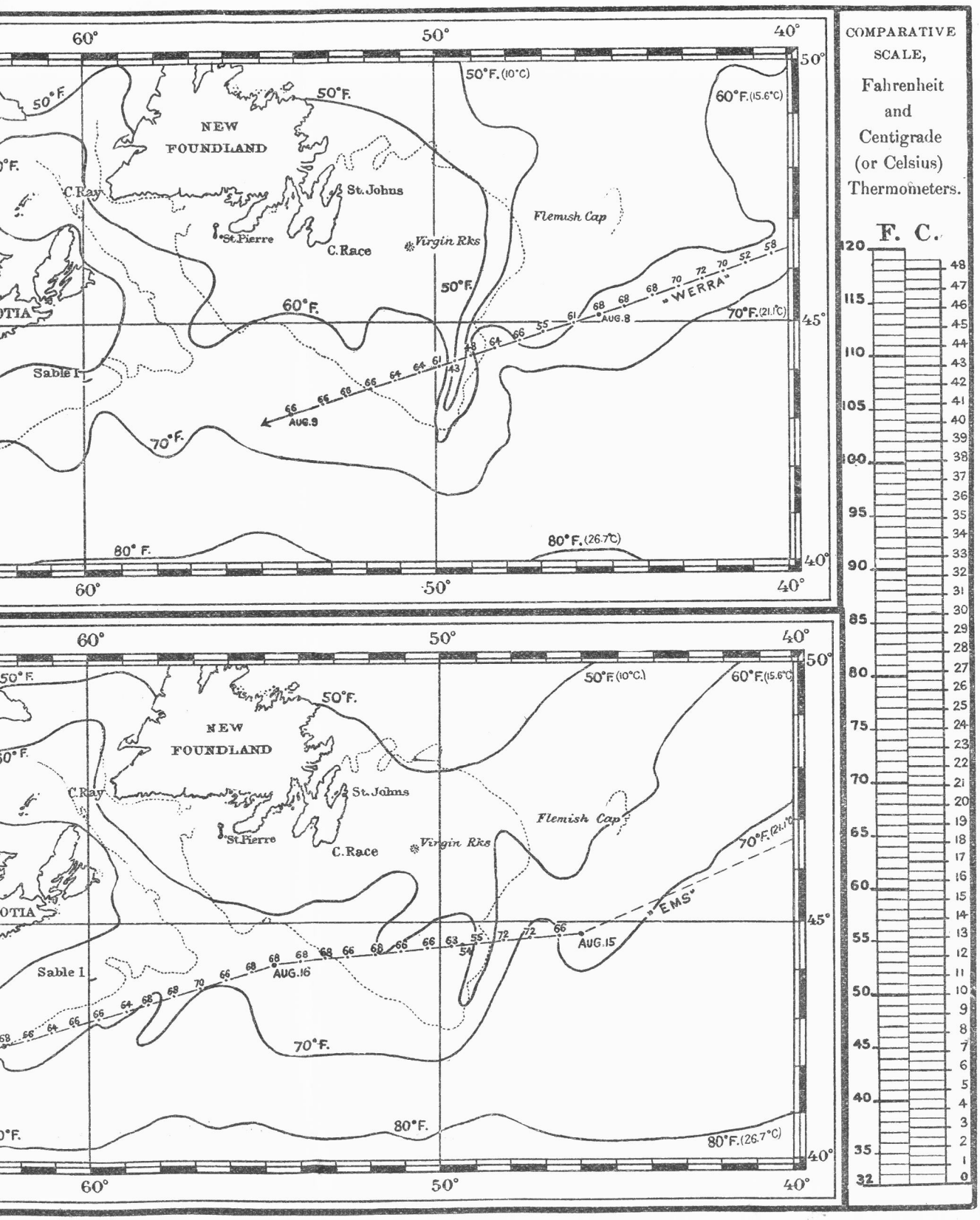

SURFACE TEMPERATURES.
Mean Temperature of Water at Surface for the
First Half of August, 1890:
From Greenwich Noon Observations and detailed temperature reports received up to August 29. 1890.
NOTE.—The track of the German Steam ship "Werra," Captain Pöhle, with observed temperatures, is from a report by 3d Officer Morgenstern.
70°
60°
50°
50°
45°
40°
50°F.
60°F.
70°F.
80° F.
NEW FOUNDLAND
C. Ray
St. Johns
St. Pierre
C. Race
Virgin Rk
NOVA SCOTIA
Halifax
Sable I.
C. Sable
Portland
Boston
New York
Georges Shoal
AUG. 9


SURFACE TEMPERATURES.
Mean Temperature of Water at Surface for the
Second Half of August, 1890:
From Greenwich Noon Observations and detailed temperature reports received up to August 29. 1890.
NOTE.—The track of the German Steam ship "Ems," Captain Sander, with observed temperatures, is from a report by 4th Officer Zachariae.
70°
60°
50°
50°
45°
40°
50°F.
60°F.
70°F.
80°F.
NEW FOUNDLAND
C. Ray
St. Johns
St. Pierre
C. Race
NOVA SCOTIA
Halifax
Sable I.
C. Sable
Portland
Boston
New York
Georges Shoal
AUG. 16



COMPARATIVE SCALE,

Fahrenheit and Centigrade (or Celsius) Thermometers.

F.	C.
120	48
115	46
110	43
105	41
100	38
95	35
90	32
85	29
80	27
75	24
70	21
65	18
60	16
55	13
50	10
45	7
40	4
35	2
32	0

WASHINGTON LETTER.

WASHINGTON, SEPT. 23, 1890.

MARINE METEOROLOGY, etc.—The Pilot Chart of the North Atlantic Ocean for September, (issued by the Hydrographic Office, Navy Department) is, as usual, filled with information of importance to the navigator and of interest to every one. A feature of new and special interest is the publication on the chart itself of two small charts,* with isothermal lines showing the mean surface temperature of the ocean between New York and the 40th meridian, north of the 40th parallel, for the first and second half of August. Very few realize the large number of reports that the Hydrographic Office receives from masters of vessels of every nationality, all of whom seem even more willing to help our Office than the corresponding offices of their own governments, on account (so they say) of the prompt and practical character of our publications. These surface temperature charts, for instance, were actually issued before the month of August had quite ended, and yet more than six hundred observations had been received in time to use in preparing the chart for the first half of the month, and about three hundred for the second. The special value of such prompt publication lies in the fact that the charts are of immediate use in transatlantic navigation, and not merely of scientific or historic value, as is generally the case in work of this kind.

*See Charts.

The navigator of an ocean steamship is very largely guided in his route by the surface temperature, inasmuch as warm water indicates in this region, the easterly Gulf Stream current, and cold water inshore, or the Labrador, current. The competition is so great that every hour counts, and the object is to try to cross the Grand Banks in such a latitude as to have some 20 or 24 knots of current per day *with* the vessel, instead of an equal amount *against* her. And this is not merely a question of making a good record, but a question of economy as well. A big twin-screw steamer burns about fifty dollars' worth of coal an hour, so that the difference in one day due to current may amount to $150.

The record of the two charts shows that the Gulf Stream had even surpassed its usual midsummer northern limit: the isotherm of 80° F. runs almost due east along the 41st parallel, from the 64th to the 40th meridian, while that of 60°, which may be assumed, roughly speaking, as the limit of the Labrador current, skirts the coast within about 100 miles all the way from Cape Cod to Cape Race, although it runs down along the eastern edge of the Banks in a long wedge-shaped projection. There the sudden change of the temperature is so marked that a navigator can actually determine his longitude by it, with greater accuracy than was possible with the best instruments before the days of the modern chronometer. It is in this cold wedge of Arctic current that icebergs linger far into the summer, and some are shown now on the chart, close to the edge of the Gulf Stream.

A buoy, whose position is plotted on the chart about 600 miles E. N. E. from Bermuda, under date of June

27, has a most interesting history. It has been identified as the iron canbuoy that went adrift from Port Royal, S. C., toward the end of November, 1886. Fortunately it was marked in such a way as to be easily identified, being painted in black and white vertical stripes, with the letters "P. R." in black on one of the white stripes. This buoy has been adrift for three years and seven months, and may be heard from again. It is in the western part of the Sargasso Sea, that region of light variable currents, between Bermuda and the Azores. This is probably the longest drift on record, so far as time is concerned, although distances traversed have been greater; the famous derelict American schooner *W. L. White*, for instance, wrecked and abandoned off Delaware Bay during the "March Blizzard" (1888), drifted over to the Scottish coast, and grounded on one of the Hebrides. Another famous and almost incredible case is that of the British ship *Ada Iredale*, an iron, coal-laden vessel. Abandoned on fire in the South Pacific, in October 1876, she drifted 2,400 miles westward and was towed into Tahiti still burning, in June 1877. She continued to burn till May 1878, when she was repaired, and, as a handsome bark named *Annie Johnston*, has done good service in the trade with China. Verily, "truth is always strange—stranger than fiction."

Captain Henry F. Picking has been relieved from duty as Hydrographer, Navy Department. Lieutenant Richardson is acting Hydrographer.

The Hydrographic Office has published an abstract of the Proceedings of the International Meteorologic Congress held in Paris, September 19–26, 1889.

Lieutenant Aaron Ward, naval attaché at the U. S.

Legation, Paris, who had been delegated by the Secretary of the Navy to represent the Hydrographic Office, presented to the Congress a series of maps and books published by the Hydrographic Office. Aside from a few remarks which he made on that occasion, there is a conspicuous absence in the "Proceedings" of any discussion by North American Meteorologists, or any allusion to their eminent services.

IRRIGATION.—In order to understand the status of the question concerning the irrigation of the arid regions of the United States, it will be necessary to review briefly proceedings in Congress on the subject during the present session.

In the bill making appropriations for sundry civil expenses of the Government for the fiscal year, ending June 30, 1891, the House of Representatives agreed to the following section:

"For the purpose of investigating the extent to which the arid region of the United States can be redeemed by irrigation and for the investigation of the sources of water to be used in irrigation, and the segregation of irrigable lands in such arid region, and for the selection of sites for reservoirs and other hydraulic works necessary for the storage and utilization of water for irrigation and for ascertaining the cost thereof, and the prevention of floods and overflows, and to make the necessary maps, including the pay of employés in the field and in office, the cost of all instruments, apparatus, and materials, and all other necessary expenses connected therewith, the work to be performed by the Geological Survey, under the direction of the Secretary of the Interior, *seven hundred and twenty thousand* dollars. . . .

For engraving of maps, including the pay of employés, the cost of apparatus, instruments, and materials, and all other necessary expenses connected therewith, *fifty thousand* dollars."

When the subject was reached in the Senate it encountered determined and violent opposition, chiefly from Western Senators, although these were largely strengthened by others from all sections of the country, without political distinction. The debate, which extended over several days, developed a hatred for the whole scheme, based on the official interpretation or construction of a section of the Act of October 2, 1888, which provided that, "all land which may hereafter be designated or selected by the United States surveys for sites for reservoirs, ditches, or canals for irrigation purposes, and *all lands made susceptible of irrigation* by such reservoirs, ditches or canals, are from this time henceforth reserved from sale as the property of the United States, and shall not be subject after the passage of this act, to entry, settlement, or occupation until further provided by law." The Commissioner of the General Land Office in a circular to U. S. Registers and Receivers, after reciting the above section said: "The subject sought to be accomplished by the foregoing provision is unmistakable. The water sources and the arid lands that may be irrigated by the system of national irrigation are now reserved to be hereafter, when redeemed to agriculture, transferred to the people of the Territories, in which they are situated, for homesteads. The Act of Congress and common justice require that they should be faithfully preserved for these declared purposes. . . . Neither individuals nor corporations have a right to make filings

upon any lands thus reserved, nor can they be permitted to obtain control of the lakes and streams that are susceptible of uses for irrigating purposes. You will, therefore, immediately cancel all filings made since October 2, 1888, on such sites, . . . and you will hereafter receive no filings upon any such lands."

It was stated during the debate that under the above ruling an area of 1,350,000 square miles had been withdrawn absolutely, all entries for pre-emption, homestead, etc., having been suspended, resulting in hardships in delaying and in staying the progress of all that country. The former adherents of the scheme for irrigating the arid regions became its most bitter opponents, and some of them showered ridicule and contempt upon topographical surveys, and geological surveys, and nearly everybody connected with them. The Director was styled "a Tycoon with many tales." One member said that nothing needed a more thorough survey than the Geological Survey itself. Like Falstaff, it had grown out of all compass, and like Sir John, seemed to be not only "a falsifier itself, but a collaborator of untruths;"—"a magnificent fabric of fabrications:" That there was not money enough in the Treasury to pay for a "geological-topographical-paleontological-irrigation map of the United States. It was claimed that under a different construction of the law, only the identical lands that were to be covered with water were to be reserved; that a topographical survey of the whole region was wholly unnecessary, and that irrigation would not be benefited thereby, but that the settlement of the whole western country would be set back for the period of a generation. Said Senator Stewart: "Inasmuch as we

have failed to get reservoir sites marked out on the maps, or to get the land which can be irrigated segregated from other lands, and as we have spent $350,000 with no good results, I am willing to quit and let the people do the balance. Repeal these laws, restore the *statu quo* as it was before this law was passed."

The Senate, *nem. con.*, struck out the House provision and substituted the following: "For topographic surveys in various portions of the United States $300,000, one-half of which sum shall be expended west of the 101st meridian; and so much of the Act of October 2, 1888 as provides for the selection and location of reservoirs and canals upon the public lands, and the reservation of irrigable lands, is hereby repealed: Provided, that reservoir and canal sites heretofore located or selected shall remain segregated and reserved from entry or settlement until otherwise provided by law."

The House of Representatives yielded to this proposition in a modified form, viz.: "For topographic surveys in various portions of the United States, $325,000, one-half of which sum shall be expended west of the 100th meridian; and so much of the Act of October 2, 1888, as provides for the withdrawal of the public lands from entry, occupation and settlement, is hereby repealed, and all entries made or claims initiated in good faith, and valid but for said Act, shall be recognized and may be perfected in the same manner as if said law had not been enacted, except that reservoir sites heretofore located or selected shall remain segregated and reserved from entry or settlement as provided by said Act, until otherwise provided by law, and reservoir sites hereafter located or selected on public lands shall in like manner be

reserved from the date of the location or selection thereof. No person, who shall, after the passage of this act, enter upon any of the public lands with a view to occupation, entry or settlement under any of the land laws, shall be permitted to acquire title to more than 320 acres in the aggregate, under all of said laws, but this limitation shall not operate to curtail the right of any person who has heretofore made entry or settlement on the public lands, or whose occupation, entry or settlement is validated by this act: Provided: That in all patents for lands hereafter taken up under any of the land laws of the United States or on entries or claims validated by this act west of the 100th meridian, it shall be expressed that there is reserved from the land in said patent described a right of way thereon for ditches or canals constructed by the authority of the United States."

That part of the arid land legislation of 1888, which has been repealed by this new act, has been a great check to the business of the General Land Office, and final action on entries in practically all the region west of the 100th meridian has been suspended. All these cases will now pass to patent. The provision limiting to 320 acres the amount of land that can be patented to one individual practically abolishes the Desert Land Act, and one or two other of the land laws. Under the Desert Land Act a man could make entry of 640 acres; he could also make a pre-emption, a homestead and a timber culture entry. The last three laws limited each entry to 160. The provision exempting from settlement reservoir sites, and providing for the right of way through private land for irrigating canals, is ample to carry out the proposed irrigation of the desert lands.

Several prominent assistants whose views are not in accord with those of the Director, are no longer connected with the Survey.

ALASKA BOUNDARY SURVEY.—It will not be forgotten that the United States Coast and Geodetic Survey is carrying on a preliminary survey of the frontier line between Alaska and British Columbia and the North-west Territory, in accordance with plans or projects approved by the Secretary of State. Two parties, in charge of J. E. McGrath and J. H. Turner, respectively, have been engaged near the frontier line on the Yukon and Porcupine rivers since the summer of 1889. Letters as late as June 15, 1890, have been received from Mr. McGrath.

During the summer and fall months of 1889, clouds nearly always covered the sky, so that the astronomical work of the party has been much delayed. Added to this, the rainfall has been very heavy. But the men of the party worked willingly and energetically in preparing for the winter. The wood supply in the neighborhood of the camp was poor,—not enough to last a month, so that it was necessary to go four and five miles to chop trees, which then had to be dragged from one to three hundred feet through tangled undergrowth to the streams. About 52 cords were secured.

When the party left St. Michaels, part of the supplies were left behind to be brought up in the steamboat *Arctic*, belonging to the Alaska Commercial Company, so as to reach the camp ("Camp Davidson, on Yukon River, near boundary of Alaska") not later than September 20th. Of the supplies that were carried along much the largest part was appropriated to the Porcupine

River (Turner) party, because of the uncertainty of any opportunity for later transportation to that region. But as late as October Mr. McGrath learned by messenger that the *Arctic* had been lost, before she entered the Yukon River. But few of the supplies were saved, and those in bad condition, so that when winter set in the amount of stores on hand allowed about 90 pounds of food per man per month, gross weight, which included juices, cans, etc. The amount of flour was 5 pounds a month for each man. The position was fully explained to the men, and not one asked to be discharged or expressed a wish to leave. Two men (James McLarty and James A. French) were sent down the river to a point about 150 miles below Fort Yukon, to secure if possible some of the provisions which had been sent forward from the wrecked *Arctic*. They set out on the return trip in February, with a hand-sled and a toboggan drawn by three dogs. These they loaded with flour and beans, and after seventy days' journey got into Camp Davidson on the 2d of May, having travelled 350 miles. Most of the route was gone over thrice, because they could not haul their load all at a time. They would go forward with half, cache it and go back for the remainder. When they reached camp they had only the clothes on their backs, one pair of blankets and no coats. For the last four days they cut off the tops of their boots to feed the dogs, gave them deer-skin sinew and line from the toboggan, and whatever else they could spare. Their own clothes they cached on the road.

Under date of June 15, 1890, Mr. McGrath writes that the party has been materially retarded by the nature of the weather that had prevailed, and that they

will have to remain a second winter at the camp. Monthly reports and daily journals have been kept giving a detailed account of the work done, and the manner in which the party has been employed. A collection has been made of the plants growing in the neighborhood, and all the different insects have been gathered. A number of birds were shot, but many have spoiled. The health of the party has been excellent. Mr. McGrath was unable to get any Indians to go across to Mr. Turner's camp, 200 miles north of Porcupine River; an offer of $40, and provisions for the journey not being sufficient to tempt them. He could not send any of his own party, as he had only two dogs and these animals would not be able to take what would be required for their own needs.

CHARLESTON EARTHQUAKE OF 1886.—Three hundred and twenty-six pages of the Ninth Annual Report of the Director of the U. S. Geological Survey, just printed, are taken up by a report on "The Charleston Earthquake of August 31, 1886," by Capt. (now Major) C. E. Dutton. Twenty-four hours after broken communications were restored found a geologist of the Survey and its accomplished photographer in the streets of Charleston, making permanent record of all the most striking and important features of the great catastrophe. A representative of the U. S. Signal Service, who is now the Superintendent of the U. S. Coast and Geodetic Survey, was upon the ground a day later. The great amount of thoroughly accurate information secured by these gentlemen, supplemented by the results of a very conscientious examination by Mr. Earle Sloan of every detail in the region most affected, and by the informa-

tion secured by Ensign Everett Hayden, through a large correspondence with every part of the country where shocks were noted, is condensed by Major Dutton into a report of exceeding interest. This paper, with its striking illustrations secured by the camera, will give one an impression of the earthquake much more vivid than any of the descriptions yet published, and must remain the historic record of that great catastrophe.

Some of the photographs taken at the time show the effect of the peculiar motion of the earthquake wave in a manner much more instructive to the popular eye than those reproduced in this report, and there might have been introduced with advantage two or three illustrations of those curiously shifted monuments, of which striking photographs are shown in the Library of the Survey, from which this report is distributed.

LIBRARY OF THE UNITED STATES GEOLOGICAL SURVEY.—This Library is unique among libraries. Young as it is, it surely deserves mention here when its fame has reached even to the great book-mart of the world, and it is in 1889 spoken of in the Leipzig *Centralblatt für Bibliothekswesen* as "Eine bedeutende Fachbibliothek." * It is not a Library simply, but it is also a

* Eine bedeutende Fachbibliothek ist die National Geological Survey Library in Washington. Sie wurde 1881 begründet und umfasst jetzt bereits 25,000 Bände und über 40,000 Broschüren. Der Zettelcatalog nach Autoren ist beendet; augenblicklich sind in Vorbereitung eine Bibliographie der nordamerikanischen Geologie und eine solche der officiellen geologischen Berichte der Union und der Einzelstaaten. Den werthvollsten Bestandtheil der Bibliothek bildet die Kartensammlung, die etwa 20,000 Karten enthält. Die Bibliothek ist in vorzüglicher Weise untergebracht.—*Centralblatt für Bibliothekswesen.* Leipzig, 1889, April.

"An important special library is the National Geological Survey Library in Washington. It was founded in 1881 (*i. e.*, 1882), and contains already 25,000 volumes and over 40,000 pamphlets. The card-catalogue of authors is complete; in immediate preparation are a bibliography of North American geology and one of the

book-store where books are sold and shipped to every part of the globe, and an exchange office with correspondents, as widely scattered as those of the Smithsonian Institution. These two lines of work are foreign to the library work proper, and take from such work much time, but in this case the Librarian has made them to minister to the success of the Library.

To speak more in detail, this Library has first, a Publication or Document Division, which is the custodian of everything published by the Survey, and during the seven years of its existence has borne the responsibility for 270,000 volumes of the value of over $244,000. It distributes these by sale, and renders an account therefor through sixty-eight ledgers, by exchange with scientific institutions and individuals, and reaching thus into every quarter of the world, makes all nations tributary to the library. The number of volumes handled last year was 46,837.

It has, second, a Correspondence Division, which attends to all letters relating to these publications, and received and sent out last year 30,627 letters. All this work is done by few people by means of a system elaborated by the Librarian, which is almost perfect for its purposes, and from which almost any one who handles books can take away more than one new idea.

But it is only the third division, the Library proper, that is to be considered here.

The Library grew out of the needs of the geologists and the geographers of the Survey for working tools.

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official geological reports of the Union and of the States thereof. The most valuable element of the Library is the collection of maps, which contains about 20,000 charts. The Library is lodged in an excellent manner."

The ablest geologist, the best geographer, can only maintain his place in the foremost rank by keeping himself in constant touch with current geologic and geographic literature. He can only keep abreast of his science by having ready and prompt access to the publications of institutions of learning and science, and of scientific men all over the world. In this current geologic literature the Library is especially rich.

The student needs no general scientific library, but only such books, periodicals, pamphlets and maps as relate specially to geology, or are useful in the prosecution of the work of the Survey; but certain books and periodicals of a general scientific character, including in connection with other papers contributions to geology and geography, he must have. With this current literature of general sciences the Library is fairly supplied.

The geologist must have ready access to all those standard treatises and manuals which contain the accepted principles of geology, those classic and invaluable books, which form the canon-law of geologic science. These and other books, which are of use to the investigator of special subjects, greatly increase the value of his work. One great chapter of the Library is made up of this class of publications.

In these days of special study many very important treatises are published privately, or in small editions, and in paper covers; and the cream of almost any scientific subject is found in this ephemeral form, so soon to disappear, so hard to procure. The Library possesses a remarkable collection of this pamphlet literature, and in its manner of handling them seems to have solved the problem that has vexed librarians so long.

The work of the Survey covers the whole country and its geologists must know everything that has been done in the localities wherein they are employed. They must have at their command all those reports upon the geology of the country made by the expeditions of the United States, or by the States themselves, all those memoirs by unattached and unofficial geologists; and for comparison, the official geological reports of other countries. The collection of these official geological reports of all the earth is very complete, and the collection of those which relate to the United States is believed to be the finest in existence.

Developing the Library along these lines and rigidly excluding everything not germane to survey work, it has come to contain six well rounded groups of publications: (1) the transactions of scientific societies and scientific periodicals; (2) standard treatises geologic, paleontologic, and mineralogic; (3) official and local geologic reports; (4) those books which assist in map making, viz., mathematics, surveying, topography, geography; (5) the pamphlet literature on these subjects; and (6) maps.

The phenomenal development of this Library, but eight years old, and its approved practical utility are the results of a wise system of library economy conscientiously applied. When Mr. Charles Darwin, an accomplished gentleman and scholar, was persuaded in 1882 to leave the Library of Congress and undertake the task of making from the beginning a special scientific library, he had indeed no books to make it of, but he also had no snarls to untangle, no bad work to undo, no conservative traditions to combat. He could choose the best

methods of modern library science, and adapt them as seemed to him best in the formation and management of a library purely special, and, therefore, needing a special treatment. The Director of the Survey, who displays rare sagacity in selecting his assistants, gave a hearty and sympathetic approval to all new plans that promised well, and in this free and progressive atmosphere have been born several ideas in library economy which have settled long and vexed questions in a very satisfactory way.

Thus with carefully considered but rapid steps, the Library has advanced toward its aim of special usefulness. And yet a few of those steps have been strides.

The first one was a great stride. In 1882, soon after his appointment as Librarian, Mr. Darwin visited Cincinnati, and succeeded in obtaining from Mr. Robert Clarke the whole geological portion of his fine private library. That eminent bookseller (who, by the way, conducts a bookstore as if it were a library, and in a way that would increase the usefulness of most libraries) had been collecting for so many years, that this purchase brought the Geological Survey a remarkably complete series of the State geological reports, including those early and rare ones now so difficult to find.

To this nucleus was now and then added an additional treasure; but it was not until five years afterward that Mr. Charles H. Hitchcock, pleased with the Library and its conduct, consented to part with the very rarest of his collection, and made this branch of the Library practically complete.

Another stride was taken after the death of Dr. F. V. Hayden, when his widow sent to the Library his scientific

books, and desired the selection of all not already acquired. Although no book not needed was kept, and very valuable donations were turned over to the Academy of Natural Sciences of Philadelphia and to Oberlin College, there yet remained to the Library a considerable addition to its collection of general geology and scientific transactions.

In 1888 the library of M. Jules Desnoyers, a noted French geologist, for a long time librarian of the "Musée d'histoire naturelle," was sold at auction in Paris. It was of unusual richness in early European geology and especially in rare brochures.

Mr. Darwin entrusted his commissions to his assistant, Mr. Charles A. Burnett, who personally attended the sale, and at ridiculously low cost secured practically everything offered in the line of geology. This purchase comprised over 700 volumes and about 2,000 pamphlets on local geology, mineralogy and paleontology, artesian wells, coal, earthquakes, glaciers and volcanoes.

In 1889, Miss Francis Lea divided a large portion of Dr. Isaac Lea's scientific library between the National Museum and the Geological Survey, and Dr. W. H. Dall, acting for her, allotted to the Survey 576 books and pamphlets. In this year also the question of irrigation delegated to the Survey created a demand for the standard works upon the subject. These were not only not to be found in Washington, but could not be had in this country. The legitimate scope of the Library was enlarged to include not only works upon irrigation proper, but also the ministering subjects of meteorology, hydraulics and engineering. The most important works

on these subjects have so far been produced in foreign countries, and during the last half of the year there was secured from England, France, Spain, Germany, Italy and India a valuable collection of works, which will be of very material service to the topographer, the engineer, and the economist, in the study of irrigation.

The Library now contains 27,515 books (of which 19,243 were obtained by exchange, 8,272 by purchase) 37,957 pamphlets (of which 33,580 were obtained by exchange, 4,377 by purchase), in all 64,472 books and pamphlets. Its map cases are filled with *twenty thousand* topographic and geologic maps, classified geographically and indexed and numbered. The map-room will yet permit of limited growth, the pamphlet cases in the pamphlet room are sufficient for some time to come, but the document rooms are overcrowded, and the Library has overflowed into rooms in the basement and upon the second floor, and fourth and fifth floors of the Survey building until the difficulties of its administration are doubled. No confusion has been allowed to result from this condition; and the current work has been kept well in hand, but, more than any other part of the Survey, the Library needs a permanent and fitting home, with less public rooms for study,

For one aim in completing the Library from its American side is to make possible here the preparation of a Bibliography, or Bibliographies, of North American geology. Bibliographies of special topics will be here made by the specialists of the Survey; of these, one, that of paleo-botany by L. F. Ward, is about complete. A general bibliography of North American geology is preparing under the eyes of the Librarian, and although

this cannot be published for some years, it is probable that that part of it which embraces the official geological reports of the States and of the United States can be issued separately within a twelvemonth.

BOARD ON GEOGRAPHIC NAMES.—The United States Board on Geographic Names, heretofore acting by authority of the heads of the several executive departments represented, has been formally constituted and consolidated by the following executive order:

As it is desirable that uniform usage in regard to geographic nomenclature and orthography obtain throughout the Executive Departments of the Government, and particularly upon the maps and charts issued by the various Departments and Bureaus, I hereby constitute a Board on Geographic Names, and designate the following persons, who have heretofore co-operated for a similar purpose under the authority of the several Departments, Bureaus and institutions with which they are connected, as members of said Board: Prof. Thomas C. Mendenhall, U. S. Coast and Geodetic Survey, chairman; Andrew H. Allen, Department of State; Capt. Henry L. Howison (U. S. Navy), Lighthouse Board, Treasury Department; Capt. Thomas Turtle, Engineer Corps, War Department; Lieut. Richardson Clover (U. S. Navy), Hydrographic Office, Navy Department; Pierson H. Bristow, Post Office Department; Otis T. Mason, Smithsonian Institution; Herbert G. Ogden, U. S. Coast and Geodetic Survey; Henry Gannett, U. S. Geological Survey; and Marcus Baker, U. S. Geological Survey.

To this Board shall be referred all unsettled questions concerning geographic names, which arise in the Ex-

ecutive Departments, and the decisions of the Board are to be accepted by these Departments as the standard authority in such matters.

Department officers are instructed to afford such assistance as may be proper to carry on the work of this Board.

The members of this Board shall serve without additional compensation, and its organization shall entail no expense on the Government.

BENJ. HARRISON.

EXECUTIVE MANSION, September 4, 1890.

Lieut. Richardson Clover, U. S. N., of the Hydrographic Office, Navy Department, has been chosen by the Board as secretary, and all official communications for the Board are to be addressed to him.

There has been no session of the Board since the last letter to the BULLETIN. The next meeting will be held in October.

COAST PILOT OF CALIFORNIA, OREGON AND WASHINGTON.—Mr. George Davidson, of the U. S. Coast and Geodetic Survey, relates some interesting facts in connection with the publication of the *Pacific Coast Pilot*, the 4th edition of which, entirely re-written, has recently appeared.

The first edition was undertaken during 1854–58. It was written wholly outside of official hours and duties, and part of it was first published in one of the daily journals of San Francisco. His earlier duties on the coast in 1850–54, in the determination of geographical positions, from Mexico to British Columbia, and in examining sites for light-houses, had somewhat familiarized Professor Davidson with the general features of

nearly every mile of the sea-board. When he had written the matter of the first edition and offered it to Superintendent Bache, the latter at first hesitated about receiving it, because he had known nothing of it officially, but finally accepted it upon Mr. Davidson's assuming the responsibility for the accuracy of the work. A second edition was called for in 1862, and a third in 1869. In these editions new material was added with as little change by re-writing as practicable. In 1880, when the Superintendent called for a fourth edition, it was found that the vast amount of new data could not be interpolated, so the work was entirely re-written, and it has grown to three or four times the size of the third edition (721 pp., 172 plates).

This volume states what is known of the Pacific Coast of the United States from the southern boundary of California to the northern boundary of Washington, embracing over 3,120 miles, including islands in Washington and the shores of Puget Sound.

Mr. Davidson has undertaken a scheme for photographing the whole sea-coast both for land-fall and for special objects.

HYPSOMETRY.—The United States Coast and Geodetic Survey has recently published two contributions. (1) Heights from geodetic levelling between New Orleans, La., and Wilkerson's Landing, Mississippi River opposite Arkansas City, Ark., 1879–1881. Field-work by O. H. Tittman, Andrew Braid, J. B. Weir and J. B. Johnson. Reduction by C. A. Schott. (2) Heights from geodetic levelling between Mobile and Okolona, 1884–1887. Observations by J. B. Weir and J. E. Mc Grath. Reduction by C. A. Schott.

GATHERING OF SCIENTISTS.—The American Association for the Advancement of Science, which has just closed its annual meeting at Indianapolis, adjourned to meet in Washington next year, probably about September 1. At about the same time it has also been decided to hold the much-talked of International Geological Congress. On this account the Association for the Advancement of Science has invited the prominent scientific men of Canada and the Latin countries to the south, with a view of making it a great Pan-American event.

Professor Mendenhall, Superintendent of the Coast and Geodetic Survey, who is deeply interested in these meetings, anticipates that the occasion will bring to Washington from 1,000 to 1,500 scientists, 200 or 300 of whom will be from European countries. It will, in all probability, be one of the most important meetings of scientific men ever held on this continent.

ASTROPHOTOGRAPHIC CONGRESS.—The Naval Observatory has incorporated with its volume of "Washington Observations," an appendix, containing Lieutenant Winterhalter's account of Proceedings of the International-Astrophotographic Congress held in Paris, in 1887. The Congress was composed of fifty-eight members, representing sixteen different nationalities. The delegates from the United States were Lieut. A. G. Winterhalter, of the U. S. Naval Observatory, W. L. Elkin, of the Astronomical Observatory of Yale College, and the late C. H. F. Peters, of the Litchfield Observatory, Hamilton College. The latter gentleman represented also the American Academy of Arts and Sciences.

The object of this gathering of eminent astronomers

was to lay the foundation for the construction of a chart of the heavens by photography. The character of the instruments to be used was determined, and many other matters to enable an observer in any part of the world to engage in the undertaking with a correct understanding of what the others were doing, so that he could make his work correspond with theirs. The heavens will be divided into zones, beginning with the north pole. Each zone or section will be five or ten degrees in width, and it will be assigned to some observatory in convenient latitude. There is a chain of observatories in this stellar confederation, that will cover every inch of the sky, both in the northern and southern hemispheres.

One of the results hoped for, from the proposed photographic charting of the sky, is the relief of practical astronomers from much of the most wearying drudgery of their work. The stars are catalogued now by the most patient toil. Of course the photographs will not do away with all necessity of observations in the usual manner, but they will greatly assist the astronomer. Another advantage claimed for photography is, that the element of "personal error" is almost wholly eliminated from the operation. The correctness of the record will not depend on the accuracy of the eye and hand of the observer.

In connection with Lieutenant Winterhalter's mission to this Congress he was commissioned also to visit the observatories of Europe, taking cognizance of modern improvements and bearing in mind the necessities of the new Naval Observatory, now in process of erection. The results of his investigations are now published in connection with the Proceedings of the Astrophotographic

Congress, in a quarto volume, in which he details the history, personnel, construction and instruments of upwards of fifty of the European observatories. The volume contains also views and plans of prominent observatories and instruments in use.

AMERICAN FORESTS.—At a recent meeting in Berlin of the Geographical Society, Chief Forest Master Kessler called attention to the waste of timber in the United States. Among other details Mr. Kessler spoke of the destruction of forests in the United States during recent years. Quoting from the tenth census, he stated that in 1880 the 25,708 saw-mills then in operation converted $120,000,000 worth of raw timber stock into various kinds of lumber, and he asserted that, at the same rate, there would be no good-sized timber left in forty years. He spoke of the enormous waste of wood by forest fires, which are the result for the most part of carelessness or a desire to clear land for cultivation, and declared that the planting of new forests, which has received some attention in the Eastern States, cannot begin to offset the waste. He said that there was reason to fear that America will soon be impoverished for tree property. Mr. Kessler made the striking comparison that while the United States had but eleven per cent. of its area covered by forests, the empire of Germany has twenty six per cent. of its entire area so covered. He said that the reckless destruction of trees in America and the indifference of Americans to the restoration of forests is a menace, not alone to the wealth of the nation, but to climatic conditions and the fertility of the soil.* H.

* Communicated by Consul H. F. Merritt to the Dept. of State.